

CHENBEI LU

Ithaca, NY $\diamond$ chenbei.lu@cornell.edu $\diamond$ www.luchenbei.com

UPDATED AUGUST 2026

RESEARCH PROFILE

My research develops theory, algorithms, and applications for reliable sequential decision-making under uncertainty. I study how structural information—including predictions, factorization, operational constraints, network coupling, and physical models—can improve the statistical efficiency, computational scalability, and reliability of reinforcement learning and stochastic optimization. My work is closely connected to power-system operation, storage control, demand flexibility, and AI data centers, where application challenges motivate new methodological questions and theoretical insights guide the design of reliable decision methods.

ACADEMIC APPOINTMENTS

Cornell University	AI for Science Institute	<i>Ithaca, NY, USA</i>
<i>Eric and Wendy Schmidt AI in Science Postdoctoral Fellow</i>		Sep. 2025–Present
Host: Prof. Fengqi You		

EDUCATION

Tsinghua University	Institute of Interdisciplinary Information Sciences	<i>Beijing, CN</i>
<i>Ph.D. in Computer Science</i>		Sep. 2020–Jun. 2025
Advisor: Prof. Chenye Wu, Prof. Ran Duan, IIIS Outstanding Graduate Award		

California Institute of Technology	Computing & Mathematical Sciences Department	<i>Pasadena, CA, USA</i>
<i>Visiting Student Researcher</i>		Aug. 2023–Feb. 2024
Advisor: Prof. Adam Wierman		

Huazhong University of Science & Technology	School of Software Engineering	<i>Wuhan, CN</i>
<i>B.E. in Computer Software Engineering</i>		Sep. 2016–Jun. 2020
GPA 3.97 (Rank 1/180), Outstanding Graduate, Outstanding Bachelor's Thesis Award		

PUBLICATIONS

* indicates equal contribution.

Peer-Reviewed Publications

Sequential Decision-Making: Theory and Algorithms

1. **Chenbei Lu**, Zaiwei Chen, Tongxin Li, Chenye Wu, and Adam Wierman. “Reinforcement Learning with Imperfect Transition Predictions: A Bellman–Jensen Approach.” *NeurIPS 2025*, **Spotlight**.
2. **Chenbei Lu**, Laixi Shi, Zaiwei Chen, Chenye Wu, and Adam Wierman. “Overcoming the Curse of Dimensionality of Reinforcement Learning via Approximate Factorization.” *ICML 2025*.
3. Hongyu Yi, **Chenbei Lu**, and Jing Yu. “Achieving $\tilde{O}(1/\varepsilon)$ Sample Complexity for Bilinear Systems Identification under Bounded Noise.” *IEEE Control Systems Letters*, to appear, 2026.
4. Hongyu Yi*, **Chenbei Lu***, and Chenye Wu. “On the Optimal Deterministic Policy Learning in Chance-Constrained Markov Decision Processes.” *IEEE Control Systems Letters*, 2025.

Learning, Optimization, and Control for Energy Systems

5. **Chenbei Lu** and Fengqi You. “Online Neural Fusion of Deep Reinforcement Learning and Model Predictive Control for Comfort-Aware Greenhouse Energy Optimization.” *Applied Energy*, to appear, 2026.
6. **Chenbei Lu**, Jinhao Liang, Hongyu Yi, and Chenye Wu. “Cost-Effective Closed-Loop Bilevel Robust Optimization for Joint Chance-Constrained Economic Dispatch.” *ACM e-Energy 2025*.

7. **Chenbei Lu**, Hongyu Yi, Jiahao Zhang, and Chenye Wu. “Self-Improving Online Storage Control for Stable Wind Power Commitment.” *IEEE Transactions on Smart Grid*, 2024.
8. **Chenbei Lu**, Nan Gu, Wenqian Jiang, and Chenye Wu. “Sample-Adaptive Robust Economic Dispatch With Statistically Feasible Guarantees.” *IEEE Transactions on Power Systems*, 2023.
9. **Chenbei Lu**, Wenqian Jiang, and Chenye Wu. “Effective End-to-End Learning Framework for Economic Dispatch.” *IEEE Transactions on Network Science and Engineering*, 9(4): 2673–2683, 2022.
10. Jinhao Liang, Wenqian Jiang, **Chenbei Lu**, and Chenye Wu. “Joint Chance-Constrained Unit Commitment: Statistically Feasible Robust Optimization with Learning-to-Optimize Acceleration.” *IEEE Transactions on Power Systems*, 2024.
11. Wenqian Jiang, **Chenbei Lu**, and Chenye Wu. “Robust Scheduling of Thermostatically Controlled Loads with Statistically Feasible Guarantees.” *IEEE Transactions on Smart Grid*, 2023.
12. Jiaman Wu, **Chenbei Lu**, and Chenye Wu. “Learning-Aided Framework for Storage Control Facing Renewable Energy.” *IEEE Systems Journal*, 2022.

Energy Markets, Demand Flexibility, and Privacy

13. **Chenbei Lu**, Jiaman Wu, and Chenye Wu. “Privacy-Preserving Decentralized Price Coordination for EV Charging Stations.” *PSCC 2022*.
14. **Chenbei Lu**, Jingshi Cui, Haoxiang Wang, Hongyu Yi, and Chenye Wu. “Privacy-Preserving User Energy Consumption Profiling: From Theory to Application.” *IEEE Transactions on Smart Grid*, 2023.
15. **Chenbei Lu**, Jinhao Liang, Nan Gu, Haoxiang Wang, and Chenye Wu. “Manipulation-Proof Virtual Bidding Mechanism Design.” *IEEE Transactions on Energy Markets, Policy and Regulation*, 2023.
16. **Chenbei Lu**, Jiaman Wu, Jingshi Cui, Yanyan Xu, Chenye Wu, and Marta C. Gonzalez. “Deadline-Differentiated Dynamic EV Charging Price Menu Design.” *IEEE Transactions on Smart Grid*, 2022.
17. **Chenbei Lu**, Zhiqi Wang, and Chenye Wu. “Storage-Aided Service Surcharge Design for EV Charging Stations.” *IEEE CDC 2021*.
18. Haoxiang Wang, Jiasheng Zhang, **Chenbei Lu**, and Chenye Wu. “Privacy Preserving in Non-Intrusive Load Monitoring: A Differential Privacy Perspective.” *IEEE Transactions on Smart Grid*, 2020.
19. Jiaman Wu, **Chenbei Lu**, Chenye Wu, Jian Shi, Marta C. Gonzalez, Dan Wang, and Zhu Han. “A Cluster-Based Appliance-Level-of-Use Demand Response Program Design.” *Applied Energy*, 2023.

Manuscripts and Preprints

- M1. **Chenbei Lu**, Zaiwei Chen, Tongxin Li, and Adam Wierman. “Learning Chance-Constrained MDPs with Bellman Distributional Certificates.” Manuscript in preparation.
- M2. **Chenbei Lu** and Laixi Shi. “A Finite-Sample Theory of Bellman-Convex Reinforcement Learning.” Manuscript in preparation.
- M3. **Chenbei Lu** and Fengqi You. “AI Data-Center Growth Strains Regional Supply Headroom in U.S. Power Systems.” Submitted.
- M4. **Chenbei Lu**. “Strictly Feasible Reinforcement Learning in Factored CMDPs: A Minimax Theory.” Submitted.

PROFESSIONAL SERVICE

- **TPC Member:**

– *IEEE SmartGridComm*

– ACM e-Energy 2026

• **Reviewer:**

- *IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Smart Grid, IEEE Transactions on Power Systems, IEEE Transactions on Sustainable Energy, IEEE Transactions on Transportation Electrification, IEEE Transactions on Engineering Management, IEEE Transactions on Industry Applications, IEEE Systems Journal, Applied Energy, International Journal of Electrical Power & Energy Systems, Electric Power Systems Research, ACM Transactions on Modeling and Performance Evaluation of Computing Systems, Cell iScience, Scientific Reports*
- *Conference on Neural Information Processing Systems (NeurIPS), AAAI Conference on Artificial Intelligence (AAAI), IEEE Conference on Decision and Control (CDC), IEEE American Control Conference (ACC), Power Systems Computation Conference (PSCC), IEEE SmartGridComm, ACM e-Energy*

• **Organizer:**

- Cornell AI for Sustainability Seminar Series 2026

INDUSTRIAL RESEARCH EXPERIENCE

Didi Chuxing Technology Co. Department of Data Science and Intelligence

Beijing, CN

Research Intern

Jan. 2021–Nov. 2021

Topics: Improving the Efficiency of Transportation Systems through Carpooling Design

TEACHING AND MENTORING

My teaching experience includes grading, discussion sessions, and course support. My mentoring experience includes co-supervision of junior researchers on online decision-making, power-system optimization, and energy-market topics.

Course Instruction & Guest Lectures

- 2026 Spring: **Deep Learning** (Graduate Course), Cornell University
- 2025 Fall: **AI for Science** (Graduate Course), Cornell University
- 2025 Fall: **AI for Energy Systems** (Graduate Course), Cornell University

Teaching Assistant Experience

- 2021 Fall: **Combinatorial Mathematics** (Graduate Course), Tsinghua University
- 2022 Fall: **AI Research Practice** (Yao Class Undergrad Course), Tsinghua University

Student Mentoring

- **Hongyu Yi** (BS, MPhil student, CUHKSZ → PhD Student UW-Seattle ECE, 2025 Fall) Sep. 2022–Present
- **Jiajun Han** (full-time RA in CUHKSZ → PhD Student UMich CEE, 2025 Fall) Jun. 2024–Present
- **Jinhao Liang** (BS, Xidian, MPhil, CUHKSZ → PhD Student U Virginia CS, 2024 Fall) Sep. 2022–Dec. 2023

INVITED TALKS AND PRESENTATIONS

1. “**Sample-Adaptive Robust Economic Dispatch With Statistically Feasible Guarantees.**”, IEEE Power and Energy Society General Meeting 2024, Seattle, USA, July 2024.
2. “**Data-driven Power System Operation under Uncertainty: from Offline to Online Perspective.**”, National Outstanding Graduate Student Forum, The Chinese University of Hong Kong, Shenzhen, April 2024.
3. “**Sample Efficient Reinforcement Learning via Kernel Graph Decomposition.**”, Rigorous Systems Research Group Seminar, Caltech, Pasadena, USA, February 2024. Hosted by Prof. Adam Wierman.
4. “**Sample Efficient Reinforcement Learning via Kernel Graph Decomposition.**”, The Chinese University of Hong Kong, Shenzhen, November 2023. Hosted by Prof. Tongxin Li.

5. “Storage-aided Service Surcharge Design for EV Charging Stations.”, 60th IEEE Conference on Decision and Control, Virtual, December 2021.

SELECTED HONORS

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| • Eric & Wendy Schmidt AI in Science Postdoctoral Fellowship (\$210,000/2 Year) | Sep. 2025 |
| • Ezra Postdoctoral Associateship in Energy System Engineering, Cornell University | Sep. 2025 |
| • IIS Outstanding Graduate Award, Tsinghua University | Jun. 2025 |
| • Toyota Outstanding Scholarship, Tsinghua University | Oct. 2024 |
| • Outstanding Presentation Award, National Outstanding Graduate Student Forum | Apr. 2024 |
| • Ubiquant Outstanding Scholarship, Tsinghua University | Oct. 2023 |
| • Yangtze River Research Institute Scholarship, Tsinghua University | Oct. 2022 |
| • H.Y. Yang Outstanding Scholarship, Tsinghua University | Oct. 2021 |
| • Outstanding Graduate, Huazhong University of Science & Technology | Jul. 2020 |
| • Outstanding Bachelor’s Thesis Award, Huazhong University of Science & Technology | Jun. 2020 |
| • Qiming Outstanding Student Award, Huazhong University of Science & Technology | Oct. 2018 |
| • National Scholarship, Huazhong University of Science & Technology | Oct. 2017 |

REFERENCES

- **Chenye Wu** <wuchenye@cuhk.edu.cn >
Assistant Professor, School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen
Assistant Dean, Presidential Young Fellow, School of Science and Engineering
- **Adam Wierman** <adamw@caltech.edu >
Carl F. Braun Professor, Computing and Mathematical Sciences, California Institute of Technology
Director, Information Science and Technology (IST) Initiative
- **Fengqi You** <fengqi.you@cornell.edu >
Roxanne E. and Michael J. Zak Professor in Energy Systems Engineering, Cornell University
Director, Cornell AI for Sustainability Initiative; Co-director, AI for Science Institute
- **Zaiwei Chen** <chen5252@purdue.edu >
Assistant Professor, Department of Industrial Engineering, Purdue University
Solberg Academic Excellence Scholar, Department of Industrial Engineering